



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/748,714	12/21/2000	Andrew T. Hunt		4539

7590 01/25/2007
WAYNE E. NACKER
MICROCOATING TECHNOLOGIES, INC
5315 PEACHTREE INDUSTRIAL BLVD
ATLANTA, GA 30341-2107

EXAMINER

TUROCY, DAVID P

ART UNIT	PAPER NUMBER
----------	--------------

1762

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/25/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

09/748,714

Applicant(s)

HUNT ET AL.

Examiner

David Turocy

Art Unit

1762

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Petition to revive dated 9/25/2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-33 and 90-100 is/are pending in the application.
- 4a) Of the above claim(s) 5 and 90-98 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6-33 and 99-100 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 4/30/2001
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. The applicant's amendments, filed 9/25/2006, have been fully considered and reviewed by the examiner. The examiner notes the amendment to the claims to require "combustion". The examiner notes the cancellation of withdrawn claims 5 and 90-98. Claims 1-4, 6-33 and 99-100 remain pending in the instant application.

Response to Arguments

2. Applicant's arguments with respect to claims 1-4, 7-9, 23-26, and 28-33 have been considered but are moot in view of the new ground(s) of rejection.

The applicant arguments with respect to Combustion Chemical Vapor deposition are not commensurate in scope with the claim because the claims are not necessarily directed to the particulars of such a process.

Additionally, the examiner notes the applicant appears to be narrowly interpreting "combustion" to require the particulars of the CCVD process, however, such is not the case. Combustion has not been explicitly defined in the specification to only require what the applicants allege and therefore given its broadest reasonable interpretation. During patent examination, the pending claims must be "given the broadest reasonable interpretation consistent with the specification" by giving words their plain meaning unless the specification provides a clear definition. See *In re Prater* 415 F.2d 1393 1404-05 162 USPQ 541 and *In re Zletz* 893 F.2d 319, 321, 13 USPQ2d 1320.

As evidenced by the attached definitions, combustion can be defined as: "chemical change accompanied by the liberation of heat, sound and/or light" or alternatively as: "chemical combination attended by production of heat and light." Therefore any chemical change that results in light and/or heat can broadly be defined as combustion. It is the examiners position that the processes as taught by Affinito, Schutze and McKee are directed to plasma processes, and plasmas are known in the art to include the liberation of heat and/or light. As evidenced by the definition of plasma, which defines plasma as: "a flame created by passing a gas" or "a very hot flame produced by passing a gas..." Therefore, as evidenced by the supplied definitions, when reading the claimed limitations in their broadest reasonable interpretation, a plasma as produced by Affinito, Schutze, and McKee can be considered a combustion and therefore the products of the plasma can be considered combustion products as required by the claims.

The applicant has argued against the McKee reference stating that the reference fails to disclose a redirected path at an angle relative to said first path, however, the examiner disagrees. McKee clearly discloses supplying the redirect gas at the combustion and gases are redirected around the flow of the redirect gas. The applicant alleges and the examiner agrees that the purpose of McKee is to uniformly distribute the plasma across the substrate surface, however, such a process will inherently result in redirecting at least part of the combustion along a first path to be redirected at an angle relative to the first path. Such is evidenced by the arrows (74) of the combustion flow.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

*** During patent examination, the pending claims must be “given the broadest reasonable interpretation consistent with the specification” by giving words their plain meaning unless the specification provides a clear definition. See *In re Prater* 415 F.2d 1393 1404-05 162 USPQ 541 and *In re Zletz* 893 F.2d 319, 321, 13 USPQ2d 1320. ***

4. Claims 1-2 and 15-18 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent 5084126 by McKee et al., hereafter McKee.

McKee teaches of a method of forming a coating on a substrate comprising activating a precursor material by feeding the material into a localized environment having an energy source (Figures, Column 2, lines 50-60, Column 4, lines 14-36). McKee discloses directing the material along a first path and providing additional gas

flow to the first path to redirect the material into a different path, thereby causing the material to contact the substrate (Figures, Column 2, lines 50-60, Column 4, lines 14-36).

As addressed above in section 2, McKee teaches plasma, which can be considered combustion and the redirect path is adjusted to an angle relative to the first path.

5. Claims 6, 11-14, 21-33 are rejected under 35 U.S.C. 102(e) as being anticipated by US Patent 6228436 by Affinito., hereafter Affinito.

Claims 6, 21 and 22: Affinito teaches of providing atleast one energy source, electrode (204), activating a liquid precursor material to form a plasma (combustion as addressed in section 2 above), where a portion would be vaporized, within gases of the localized environment, and directing the gasses along a first path (Figure 2, Column 1, lines 13-50). The process of Affinito teaches coating a moving substrate; it is the examiners position that the moving substrate, as taught by Affinito will inherently move the air directly above the substrate in a direction relative to the running web (see figure 1a and 2). Therefore, this amount of pressure differential, resulting from the layer of air (redirect gas) moving directly above the substrate surface will result in a measurable amount of angle change between the plasma exiting the exit slot (128) and contracting the substrate surface. Affinito discloses heating the walls of the localized environment

and therefore heated surfaces and the electrode may be considered combustion sources within the entire chamber (Column 6, lines 28-58, Column 7, lines 60-67).

The examiner notes the claims require "comprising" language, and such is open to other process steps. Therefore, while the process of Affinito injects the liquid and then vaporizes the liquid prior to contacting the combustion source, such a process reads on the claims as written because Affinito discloses feeding a liquid precursor into a localized environment of a combustion source and then using the combustion source to cause combustion of the precursor material.

Claims 11-14, based on the substrate temperatures defined at column 6, lines 21-25 and the temperatures for flash evaporating the precursor described in column 2, lines 5-7, the gasses would be cooled to the values in the claimed range, which cooling inherently results in a pressure differential.

Claim 23-26: Affinito discloses providing a pressure differential by supplying a pressurized gas into the localized environment near, but not directly at, at least one combustion source (Figure 2), the pressurized gasses intercept the gas flow out from the at least one combustion source redirect the gases toward the surface (Figure 2).

Claim 27: The pressurize liquid from the ultrasonic nozzle will provide at least one source of pressure differential.

Claim 28-29: Affinito discloses the including addition precursor materials to react with the liquid monomer, where the plasma source causes the precursors to react (Column 7, line 65- Column 8, line 5).

Claim 30: Affinito discloses atleast two energy sources (electrode and heated surface).

Claims 31-33: Affinito discloses using a vacuum in conjuncture with the pressurized fluid (Column 2, lines 5-10).

As addressed above in section 2, Affinito teaches plasma which can be considered combustion.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Art Unit: 1762

8. Claims 3-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over McKee.

McKee teaches all the limitations of these claims as discussed above, but does not explicitly disclose the claimed coating thickness, however, because McKee discloses plasma deposition during semiconductor and the process is clearly capable of providing coating thicknesses as desired the a particular application and it would have been obvious to have produced coatings in the claimed range based upon a desired application to render the coating useful, especially absent evidence showing a criticality of producing coating thicknesses in the claimed range.

9. Claims 7-10, 19, and 99-100 are rejected under 35 U.S.C. 103(a) as being unpatentable over Affinito.

Claim 7-10: Affinito teaches all the limitations to these claims as discussed above and in addition Affinito discloses dilution of the gasses (Column 7, lines 65-68), except Affinito fails to disclose the degree of dilution. However, Affinito discloses providing the dilution gases to stabilize the precursor material (Column 7, lines 65-68), therefore Affinito clearly discloses the amount of dilution is a result effective variable. If the amount of dilution gasses is too low it results in improper stabilization and too much dilution gasses would result in no added benefits of increase stabilization.

Therefore it would have been obvious to one skill in the art at the time of the invention was made to determine the optimal value for the dilution percent used in the

Art Unit: 1762

process of Affinito through routine experimentation, to efficiently and effectively stabilize the liquid precursor.

Claim 19 and 99-100: Affinito teaches all the limitations to these claims as discussed above, except Affinito fails to disclose a localized environment as claimed. However, it is the examiners position that the process parameters of pressure is a known result effective variable. If pressure were high it would result improper evaporation and too little pressure would result in no added benefits of increase evaporation.

Therefore it would have been obvious to one skill in the art at the time of the invention was made to determine the optimal value for the pressure used in the process of Affinito through routine experimentation, to efficiently and effectively evaporate the liquid precursor. If applicant can establish a showing of criticality in the claimed pressure, the rejection will be withdrawn. See *Ex parte Khusid*, 174 USPQ 59.

10. Claims 1-4, 6, 19, 20-26, 99-100 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schutze in view of McKee.

Schutze discloses providing atleast one energy source, includes a combustion source, and feeding a precursor material into the localized environment of the energy source to activate the precursor material and directing the gases along a first path (Figure 6, Page 1685, Page 1687). Schutze discloses operating at atmospheric

environment (Page 1685). Schutze discloses providing a precursor material comprising solids, volatiles molecules, or powder, which vaporize and therefore the precursor material will comprise a portion of liquid that is partially vaporized (Page 1687). Schutze fails to disclose providing a pressure differential to the localized environment to redirect the gasses along a redirect path.

However, McKee teaches all the limitations of these claims as discussed above and in addition discloses providing the gas jets to alter the flow of the plasma results in a more uniform distribution of the plasma flow and therefore provides a more uniform film (abstract).

Therefore, it would have been obvious to one skilled in the art at the time of the invention to modify Schutze to use the pressure differential suggested by McKee to provide a desirable distribution of the plasma to reap the benefits of a more uniform plasma treatment.

Claims 3-4: Schutze in view of McKee does not explicitly disclose the claimed coating thickness, however, because Schutze discloses providing coating thicknesses at 10 microns per minute and a coating thickness is known in the art for a particular application and it would have been obvious to have produced coatings in the claimed range based upon a desired application to render the coating useful, especially absent evidence showing a criticality of producing coating thicknesses in the claimed range.

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David Turocy whose telephone number is (571) 272-2940. The examiner can normally be reached on Monday-Friday 8:30-6:00, No 2nd Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

David Turocy
AU 1762



TIMOTHY MEEKS
SUPERVISORY PATENT EXAMINER